

3.10 INVASIVE PLANTS

3.10.1 SCOPE OF ANALYSIS AND ANALYSIS METHODS

Invasive species include non-native plants, insects, and pathogens that threaten the health of National Forests and Grasslands (USDA Forest Service 2004a). In this document, the terms “noxious weeds,” “invasive species,” “weeds,” and “invasive plants,” are used synonymously. “Invasive plants” are defined as non-native species that are likely to cause or have the potential to cause economic or environmental harm to the ecosystem(s) under consideration or harm to human health (USDA Forest Service 2009a).

The Forest Service has developed a “National Strategy and Implementation Plan for Invasive Species” to address the threats invasive species pose to National Forests and Grasslands (USDA Forest Service 2004a). Short-term actions identified in this document include prevention, early detection and rapid response, control and management, and rehabilitation and restoration.

The analysis area for invasive plants consists of the Bitterroot National Forest, not including Designated Wilderness.

The effects analysis will consider the following to determine the potential extent of invasive plant invasion or expansion associated with motorized use:

- Ø presence of existing invasive plant populations
- Ø proximity to roads or trails
- Ø off-road travel to access dispersed camping sites

The following indicators will be used: 1) The number of trails proposed to be designated as open to motorcycles and motorized vehicles 50 inches or less in width which are impacted by invasive plants, 2) The miles of roads currently closed that are proposed to be opened, and 3) The acres of invasive plants infestations within motorized wheeled access corridors for dispersed camping.

The number, or miles, of roads open to motorized vehicles was not selected as an indicator because virtually all roads have spotted knapweed or other invasive plants along them.

Information from “*An Evaluation of Noxious Weeds on the Lolo, Bitterroot, and Flathead National Forest*” (Losensky 1987) was also incorporated into the assessment. Generally, removal of the tree canopy and soil disturbance increases the risk of invasion (Losensky 1987). Spotted knapweed is particularly responsive to this type of disturbance.

The Rare Plants effects analysis (Section 3.9 of this FEIS) also discusses invasive plants, since their spread into sensitive plant habitat is one of the main threats to species’ viability. This section should be reviewed in order to fully understand the effect of invasive plants on plant diversity and habitat quality.

3.10.2 REGULATORY FRAMEWORK

The Forest Plan goal for managing invasive plants is:

“Control noxious weeds to protect resource values and minimize adverse effects on adjacent private land” (USDA Forest Service 1987a, II-3).

The 2001 supplement to the Forest Service Manual (FSM 2080) {Project File folder ‘invasive plants,’ Project File document NOX-002.pdf} outlines an Integrated Weed Management approach for the control of invasive plants on National Forest System lands in Region 1 (The Bitterroot National Forest is located in Region 1). Included in the supplement are requirements and recommendations for invasive plants management when conducting ground-disturbing activities. In order to prevent weed establishment, one of the required objectives is to:

“Revegetate all disturbed soil, except the travel way on surfaced roads, in a manner that optimizes plant establishment for that specific site, unless ongoing disturbance at the site would prevent weed establishment. Use native material where appropriate and available. Use a seed mix that includes fast, early season species to provide quick, dense revegetation. To avoid weed contaminated seed, each lot must be tested by a certified seed laboratory against all State noxious weed lists and documentation of the seed inspection test provided.”

In order to reduce the risks associated with invasive plant introduction through timber harvest activities, several requirements were put into effect. In 2012, the Bitterroot National Forest revised their seed mixes to include only native species {Project File document NOX-001.pdf}, and the Region 1 of the Forest Service issued an order requiring the use of certified noxious weed-seed-free forage on National Forest System lands. In 1998, Region 1 of the Forest Service began requiring all timber sale contracts to include a clause requiring the cleaning of equipment {Project File document NOX-005.pdf}. Forest Service Manual (FSM) 2080 was released in 2001 with weed prevention requirements and recommendations for activities on National Forest System lands {Project File document NOX-002.pdf}.

Under “Prevention and Control Measures” for invasive plants, the Forest Service Manual recommends that “Motorized and/or mechanized (such as mountain bikes) trail users should inspect and clean their vehicles prior to using NFS lands” (FSM 2081.2, section 2.b. (1)(d)). If all users adhere to this recommendation and stay on designated routes, noxious weed spread may be reduced by motorized users.

Certified weed free or weed seed free hay, mulch, seed, and pellets are required to be used on National Forest System lands {Project File document NOX-002.pdf}. The list of recommended seed mixes for use on the Bitterroot National Forest is included in {Project File document NOX-001.pdf}.

3.10.3 AFFECTED ENVIRONMENT

Invasive plants have impacted native plant diversity on the Bitterroot National Forest, particularly in the grassland ecosystems where weeds are most prolific. The loss of native plant diversity impacts wildlife forage, causes soil erosion, increases sediment in watersheds, and reduces pollinator populations.

Invasive plants are more common along routes open to motorized vehicles than in other parts of the Bitterroot National Forest (NRIS TESP/Invasives Database 2012). Travel corridors, consisting of constructed roads or trails, whether open to motorized use or not, are considered an invasive plant “vector” (a “vector” being anything which transports a weed to another area). Routes constructed for full-size vehicles create corridors for invasive plant-seed transport by altering the condition of a site through removal of native vegetation, opening the canopy, and removing and disturbing soil layers (Hansen and Clevenger 2005, Trombulak and Frissell 2000, Tyser and Worley 1992). Roads can open up previously weed-free areas to human use, whether motorized or nonmotorized, and open areas to wildlife. Even trails where no motorized use occurs can act as corridors for the movement of exotic plant species (Benninger-Truax et al. 1992), although the level of weed spread is not as great as seen with motorized routes open to full-size vehicles (Tyser and Worley 1992). Another study showed that areas adjacent to more improved roads were used more frequently and thus contained more invasive plants than areas adjacent to primitive, less utilized, four wheel drive roads (Gelbard and Belnap 2003).

Besides the obvious reason that motorized roads receive more use than other areas on the Forest, it has also been shown that wheeled vehicles transport greater quantities of weed seed than other users. In a controlled study it was found that hundreds of weed seeds became attached to a vehicle when backing over a weed infested field. After driving ten miles, only 8 percent of these seeds remained on the vehicle (Trunkle and Fay 1991). Although seeds can be spread by other users, this study indicates that vehicles are more likely to pick up large quantities of seed. This is dependent, of course, on where vehicles are parked or driven prior to being driven on Forest roads. As long as vehicles stay on roads this decreases the risk of spreading weeds off-road. Another risk of vehicles traveling off road is that they can pick up weeds along the cut or fill slopes of a road and transport them to weed-free areas off-road.

Many routes in the analysis area were analyzed in previous NEPA documents for herbicide application, and periodic monitoring and spraying will be on-going along these routes.

There are an undetermined number of miles of unauthorized routes on the Forest which are being used primarily by ATVs and motorcycles. Forest personnel are aware of some of these routes, and they monitor and treat some of these areas. However, there are other unauthorized routes that forest personnel are not aware of, and they would not be treated. The potential for invasive plants introduction and spread on these routes would continue.

There are many dispersed campsites located throughout the Forest which are accessed using motorized wheeled vehicles. These sites, and particularly the routes used to access them, have the potential to introduce new invasive plant species and to spread these species throughout the Forest.

The analysis area contains widespread populations of spotted knapweed (*Centaurea biebersteinii*) along roads, in previously disturbed areas, and on south and west-facing open slopes below 6,500 feet. Other invasive plants found throughout the analysis area include oxeye daisy (*Leucanthemum vulgare*), sulfur cinquefoil (*Potentilla recta*), St. John's wort (*Hypericum perforatum*), canada thistle (*Cirsium arvense*), leafy spurge (*Euphorbia esula*), dalmation toadflax (*Linaria dalmatica*), yellow toadflax (*Linaria vulgaris*), tall buttercup (*Ranunculus acris*), Rush skeletonweed (*Chondrilla juncea*), common tansy (*Tanacetum vulgare*), hounds-tongue (*Cynoglossum officinale*), blueweed (*Echium vulgare*), cheatgrass (*Bromus tectorum*), Diffuse knapweed (*Centaurea diffusa*), yellow starthistle (*Centaurea solstitialis*), scotchbroom (*Cystisus scoparius*), orange hawkweed (*Hieracium aurantiacum*), and meadow hawkweed (*Hieracium caespitosum*). Hoary alyssum (*Berteroa incana*), Nodding plumeless thistle (*Carduus nutans*), Bull thistle (*Cirsium vulgare*), and Common mullein (*Verbascum Thapsus*), although not listed as an invasive plant, is an invasive non-native species that occurs in patches throughout openings on the Forest, particularly on disturbed sites, and burned areas. The Natural Resource Information System (NRIS) Threatened, Endangered, and Sensitive Plants (TESP)/Invasive Species Database supplied information on invasive plant locations used for this effects analysis (NRIS TESP/Invasives Database 2012).

A. Invasive Plant Species Information

Blueweed (*Echium vulgare*)

Blueweed occurs in isolated patches in the southern end of the Forest. Blueweed is a biennial plant introduced from Europe. It was first reported in Ravalli County in 1925 near Darby, and currently infests 8 counties in Montana. It was recently listed as a Category 2 Invasive Plant in the state of Montana. Category 2 weeds are those that have recently been introduced into the state or are rapidly spreading from their current infestation sites. Blueweed spreads by seed and is found in rocky pastures, abandoned fields and meadows, or along roadsides. It tends to prefer dry, shallow gravelly soil, with limestone parent material. Blueweed competes effectively for both nutrients and water and can reduce yield of desirable species in both cropland and wildland sites. Blueweed has been found along a few roads listed in Table 3.10-2. A population was also found along the McCoy Creek/Cooper Draw Road (Road #62891), which is closed to motorized vehicles in all alternatives. All known blueweed sites have been treated and are monitored annually for recurrence.

Blueweed has been around for years on private lands, but recently moved onto State and National Forest System lands. Currently it infests over 4 acres of Forest land.

Canada thistle (*Cirsium arvense*)

Canada thistle was most likely introduced to the United States as a contaminant of crop seed and/or ship's ballast in the early 1600s. Canada thistle reproduces both by seed and by lateral roots; however most of its reproductive energy is put into vegetative propagation (USDA Forest Service 2003b). It can regenerate from root fragments less than an inch long. Male and female flowers are produced on separate plants so

cross pollination is necessary for seed production. Due to its extensive lateral root system, Canada thistle is not easily eradicated once it becomes well established, but certain herbicides can be effective.

Canada thistle infests about 641 acres on the Forest, mostly along the Larry Creek drainage. Sites susceptible for invasion include timber harvest/salvage areas, roadsides, and riparian areas.

Cheatgrass (*Bromus tectorum*)

Cheatgrass is of concern on the Bitterroot National Forest because of its capacity to alter fire regimes. Cheatgrass is commonly associated with disturbed areas such as recently burned range and wildlands, roadsides, and eroded areas. Cheatgrass seedlings usually germinate with fall moisture and the root system develops throughout the winter. The well-developed root system exploits the spring moisture and nutrients before native species are able to germinate. Cheatgrass typically dries out and disperses seed by mid-June. The plant's fine structure and ability to dry completely and accumulate litter makes it extremely flammable. In the Snake River Plains of Idaho, cheatgrass has changed the fire cycle from 30-100 years to 3-5 years. These fires are more intense and less patchy than historical fire regimes, and change native plant diversity (Zouhar 2003a).

Currently the Sula Ranger District is using fire and chemical treatments, followed by seeding with native species, to contain cheatgrass spread.

Common Tansy (*Tanacetum vulgare*)

This species is present within the Forest's boundary, and is relatively new to the Forest. Common tansy infests close to 300 acres on the Forest. Commonly found along roadsides, disturbed areas, waste places, fields, nurseries, and landscaped areas. It reproduces by seed typically in the early spring through late fall. Seeds are viable for more than 50 years. Mowing or mechanical control stimulates vegetative reproduction. Vegetative cover is essential in managing for the decrease of seedlings. Plants can be fatally toxic to humans and animals if large quantities are ingested. It can also cause skin conditions to highly sensitive people.

Dalmatian toadflax (*Linaria dalmatica*) and Yellow toadflax (*L. vulgaris*)

Dalmatian toadflax is a Mediterranean species that has been cultivated since the 1600s because of its beautiful flowers. It was brought to the western United States in 1874 as an ornamental. Dalmatian toadflax was first reported in south central Montana in the 1940s along railroad siding yards. It was first collected in Ravalli County in 1963 (USDA Forest Service 2003b). Yellow toadflax, or butter-and-eggs, is a similar species that was introduced to North America in the mid-1800s as an ornamental. It is still sold as an ornamental by seed companies, which could result in it becoming more of a problem than Dalmatian toadflax.

Dalmatian toadflax does not establish well in the presence of competitive vegetation, but once established, it is difficult to eradicate. Both Dalmatian toadflax and yellow toadflax reproduce by seed and by lateral roots. One Dalmatian toadflax plant can produce up to 500,000 seeds.

Since these species can reproduce well both by seed and lateral roots, it often takes a combination of methods to control. A 48-acre infestation of Dalmatian toadflax occurs on the Stevensville Ranger District in the Sweeney Creek drainage (above and below Road #1315). There are also scattered plants reported at the Willoughby Environmental Education Area and along some roadsides. Management of this weed is critical because of rapid spread and control difficulty.

Forest roads with dalmatian toadflax or yellow toadflax infestations are listed in Table 3.10-2.

Diffuse knapweed (*Centaurea diffusa*)

Diffuse knapweed was discovered in 2001 in the Medicine Tree area, adjacent to private land. Approximately 1/10 of an acre exists in an area already identified for treatment for another species.

Typically found in dry open areas. Diffuse knapweed is a short-lived perennial that can form large dense infestations.

Hounds-tongue (*Cynoglossum officinale*)

Hounds-tongue infests over 1,600 acres of the Bitterroot National Forest. Hounds-tongue is typically found along roadsides, trails, and areas disturbed by grazing and timber harvest. Infestations are fairly localized, and do not appear to be expanding (USDA Forest Service 2003b). Each plant may produce from 300 – 675 seeds. Long distance dispersal is a threat because a barb-covered husk that sticks to fur and clothing encloses hounds-tongue seeds (Zouhar 2002).

Containment strategies for small hounds-tongue infestations recommend using chemicals, or pulling and removing plants and seeds.

Leafy spurge (*Euphorbia esula*)

Leafy spurge is native to eastern and central Europe, extending into Western Europe and temperate areas in Asia. It was brought to northeastern North America as an ornamental in 1829 and spread rapidly. Leafy spurge seeds have a high germination rate and may remain viable in the soil for at least seven years. The seed capsules open explosively, dispersing seed up to 15 feet away and may be carried further by water and wildlife (Lajeunesse *et al.* 1997). Leafy spurge also spreads vegetatively at several feet per year. The complex root system can reach 15 or more feet into the ground, and may have numerous buds. This, and the fact that leafy spurge can regenerate from even small pieces of root, means it is very difficult to eradicate. Immediate treatment with herbicides on very small populations can be effective. Biological controls, alone or in combination with herbicides, are probably the most effective methods of managing larger populations of leafy spurge. Mechanical or hand-pulling methods may only contribute to the vegetative spread of leafy spurge.

Leafy spurge infested about 100 acres of the Bitterroot Forest prior to the wildfires of 2000. An active integrated management program using herbicides and biological agents is successfully reducing spread and controlling new satellite infestations. Within the analysis area, leafy spurge is found in the Little Sleeping Child (17 acres), Skalkaho (18 acres), and Sleeping Child drainages (5 acres), and along some roadsides (see Table 3.10-2). Because leafy spurge spreads rapidly and is difficult to manage, it has become a high priority weed on the Forest.

Meadow hawkweed (*Hieracium caespitosum*)

Meadow hawkweed was located on the Forest in 1997 along the Martin Creek Road (Road #726) on the Sula Ranger District. This species was treated at the time, but was found again along the same road and at the nearby Martin Creek Campground (Road # 726D) during the summer of 2002. Although eradicated from these areas at present, this species is still under a “watch” designation along roadsides on the Forest.

Orange hawkweed (*Hieracium aurantiacum*)

Orange hawkweed has recently been located in small isolated patches on the Forest and adjacent private property in the Threemile, Blodgett Creek, and Camp Creek areas. There is less than one acre found on the Forest. This species is a high priority treatment species for the Forest to eradicate; populations found on the Forest are eradicated and monitored. It is found along roadsides, pastures, meadows, open forests, and other disturbed areas.

Oxeye daisy (*Leucanthemum vulgare*)

Oxeye daisy infests about 3,800 acres of the Bitterroot National Forest (USDA Forest Service 2003b), with most infestations occurring along roadsides and trails. Moist sites such as mountain meadows and riparian areas are most susceptible to invasion by this species. Each plant can produce up to 26,000 seeds, but its rhizomatous nature (ability to root from stems) allows it to form dense stands, choking out native

vegetation (Krueger and Sheley 2002). Oxeye daisy appears to be expanding throughout the Forest (USDA Forest Service 2003b).

A suppression/containment strategy is recommended for oxeye daisy using chemicals and some hand-pulling (USDA Forest Service 2003b).

Rush skeletonweed (*Chondrilla juncea*)

Rush skeletonweed is only known from a few new occurrences in the Chicken Creek area of the West Fork Ranger District. It infests less than one acre on the Forest and is monitored continually. The species is targeted for prevention and eradication within the Bitterroot Forest (USDA Forest Service 2003b).

Scotchbroom (*Cystisus scoparius*)

One site was found on the Forest and was eradicated. That site is currently monitored to ensure there is no potential for future plants from the seed bank. Scotchbroom invades natural areas and disturbed sites. Sites increase the wildfire potential due to oils contained within the plant.

Spotted knapweed (*Centaurea biebersteinii*)

Spotted knapweed is the most prolific noxious weed on the Bitterroot National Forest. It can be found on most open, south or west-facing slopes below 6,500 feet. Areas near roads usually have the highest concentrations of spotted knapweed, but it is also common along trails in wilderness areas so road construction and motorized use are not the only vectors of transport (USDA Forest Service 2003b).

Spotted knapweed currently infests about 264,000 acres of the Bitterroot National Forest (USDA Forest Service 2003b). There is a strong correlation between canopy closure and spotted knapweed infestation; the more sunlight reaching the forest floor, the higher probability of infestation. Spotted knapweed infestation is also correlated with aspect, soil type, and the degree of soil disturbance. It is most commonly found in pastures on dry, sterile, gravelly, or sandy soils, and will quickly invade disturbed sites such as road and railroad rights-of-ways, waste places, abandoned fields, timber harvest units, and overgrazed rangeland. Ponderosa pine and Douglas-fir/bunchgrass habitat types, dry shrub communities, and scree slopes are the most susceptible to knapweed invasion (Losensky 1987). Spotted knapweed is usually not found in shaded areas, or on cultivated land or irrigated pasture.

Spotted knapweed prefers the warm, dry ponderosa pine and Douglas-fir habitat types which historically burned at an interval of 5 to 25 years (USDA Forest Service 1995a). Fire suppression has increased this interval to about 50 years, resulting in higher fuel loads and the potential for a severe fire event in these areas. In western Montana, it appears that the more vegetation consumed in a fire on sites previously infested with spotted knapweed, the higher the probability of spotted knapweed spreading into newly opened areas in the immediate vicinity. Observations two years after the wildfires of 2000 on the Bitterroot National Forest indicate that areas where spotted knapweed was previously established have notably healthier looking plants with new seedlings colonizing the site and spreading to previously weed-free areas (Sutherland 2003). Another post-fire study revealed that, over time, spotted knapweed populations increased more on Douglas-fir habitats that burned at higher severities than at lower burn severities (Ferguson et al. 2007).

Current treatments for spotted knapweed include mechanical (hand pulling and mowing), biological, and chemical. Hand pulling has proven to be up to 35 percent effective, costs up to \$8,498 per acre, and can only be accomplished for small areas (USDA Forest Service 2003b). Mowing at recreation sites prevents the plants from setting seed but does not reduce the number of plants.

Although monitoring of biological control agents has not shown any measurable impacts to invasive plant species to date, biological controls can require several years to become established before they have an effect on target species. In addition, several introductions may be required to enable natural enemy populations to establish over a large area (USDA Forest Service 2003b).

Several biological agents specific to spotted knapweed have been released throughout the Forest; please refer to Table 3.10-1 for information:

Table 3.10- 1: Biological Agents Used on the Bitterroot National Forest for Spotted knapweed

| Species | Type of Insect | Mode of Action (general) |
|--------------------------|----------------|--------------------------|
| Agapeta zoegana | moth | Root miner |
| Bangastemus fausti | weevil | Seed head feeder |
| Chaetorellia acrolophi | fly | Seed head feeder |
| Cyphocleonus achates | weevil | Root miner |
| Larinus minutus | weevil | Seed head feeder |
| Larinus obtusus | weevil | Seed head feeder |
| Metzneria paucipunctella | moth | Seed head feeder |
| Pelochrista medullana | moth | Root miner |
| Sphenoptera jugoslavica | beetle | Defoliator, root miner |
| Terellia virens | fly | Seed head feeder |
| Urophora affinis | fly | Seed head feeder |
| Urophora quadrifasciata | fly | Seed head feeder |

In the meantime, chemical control methods (especially aminopyralid and picloram) appear to be the most successful for treating small spotted knapweed infestations or to aid in containment of existing populations. Since almost 20 percent of the Bitterroot National Forest is infested with spotted knapweed, a containment strategy is being used to keep it from spreading into currently uninfested areas (USDA Forest Service 2003b).

St. John's wort (*Hypericum perforatum*)

About 750 acres of the Bitterroot National Forest are currently known to be infested with St. John's wort (USDA Forest Service 2003b). Populations are scattered throughout the Forest, and appear to have no affinity to a particular habitat type. Road shoulders provide the most likely location for St. John's wort; otherwise, it has been associated with logging, grazing, or fire disturbance. In grassland communities it appears to out-compete spotted knapweed, but is not as competitive in forested areas (Losensky 1987). Each plant may produce anywhere from 15,000 to 30,000 seeds (Zouhar 2004).

A containment strategy including mechanical and chemical treatment methods has been recommended on the Bitterroot National Forest. Biological control agents are available but their use on the Forest has not yet been successful (USDA Forest Service 2003b). The main concentrations of St. John's wort are located in the Lost Horse, Camas Creek, Roaring Lion, and Ward Mountain areas.

Sulfur cinquefoil (*Potentilla recta*)

Over 13,000 acres of the Bitterroot National Forest are infested with sulfur cinquefoil (USDA Forest Service 2003b). Sulfur cinquefoil is adapted to a wide range of environmental conditions. It has been found growing in open forests, grasslands, and disturbed areas, often in association with spotted knapweed. Sulfur cinquefoil is a prolific seed-producer (about 1,600 seeds per plant) and has been known to displace spotted knapweed in mixed stands. It is unknown whether this is a successional mechanism or a result of herbicide and/or biological controls targeting spotted knapweed (Zouhar 2003b).

A containment strategy using chemicals is recommended for sulfur cinquefoil. No other method of control appears to be as effective for this weed species. Biological control agents are currently being studied (USDA Forest Service 2003b).

Tall buttercup (*Ranunculus acris*)

Tall buttercup infests about 68 acres on the Forest with 10 acres occurring in the Twogood Cabin area along the Warm Springs Trail. Sites most susceptible to invasion include sub-irrigated and wet meadows, and riparian zones.

Yellow starthistle (*Centaurea solstitialis*)

Yellow starthistle was discovered along the Selway Road in 2001. This site was treated within the same year, and currently monitored to ensure that no new plants emerge from any remnant seed bank. It is a winter annual that displaces any desirable vegetation. Found in open meadows, rangelands, and roadsides. Yellow starthistle contains a compound that in large quantities can kill horses.

The following table, Table 3.10-2, lists the roads with noxious weed infestations that are of special concern because the species are either more difficult to eradicate (dalmation toadflax, yellow toadflax, and leafy spurge), or they are newer invaders (blueweed) on the Bitterroot National Forest.

Table 3.10- 2: Invasive Plants of Concern Along Bitterroot National Forest Roads

| Road# | Name | Invasive Plants Found |
|--------------|-----------------------------|-------------------------------|
| 1315 | Sweeney Creek | Dalmation toadflax |
| 321 | N. Fork Rye/Harlan Mountain | Blueweed |
| 311 | Guide Rye Road | Blueweed |
| 5644 | Tough Bonnie Blue | Blueweed |
| 1365 | Gird Creek | Yellow toadflax |
| 714 | Skalkaho-St.Clair | Leafy spurge, yellow toadflax |
| County 372 | Sleeping Child | Leafy spurge |
| 106A | Bitterroot Big Hole Road | Yellow toadflax |

3.10.4 ENVIRONMENTAL CONSEQUENCES

Summer

A. Effects Common to All Action Alternatives

All action alternatives would have routes designated open to motorized vehicles which have invasive plants located along them, although miles will vary by alternative. Invasive plants will continue to spread along all open routes at their current rate, as travel corridors are an invasive plant vector. As long as vehicles stay on designated routes, the risk of spreading weeds outside the travel corridor is minimal.

There is the potential for new invasive plants to be introduced along open roads and trails by vehicles. If vehicles illegally travel off open motorized routes, weeds could be spread further off road to weed-free areas. This is especially a concern with the routes listed in Table 3.10-2.

Motorized travel off of designated routes would generally be prohibited, with the exception for motorized wheeled access for dispersed camping, which would be restricted to corridors either 150 or 300 feet wide on either side of the center line of a designated route, depending upon the alternative, and where resource conditions would permit such use without causing unacceptable levels of damage. This will reduce the risk of spreading invasive plants off routes except in areas where dispersed camping occurs. Not all of the dispersed campsites on the Forest have been identified and mapped, so it is unknown how many acres of potential invasive plant spread may be possible. Allowing motorized wheeled access for dispersed camping has the potential to spread invasive plants or introduce new weeds to new areas, including areas that may be weed-free. Spreading or introducing invasive plants within the dispersed camping corridors can be reduced by cleaning vehicle undercarriages (removing all mud, dirt, and plant parts) prior to

entering the area. Project design features, including public education efforts regarding the threats posed by invasive plants, and the need to clean vehicle undercarriages prior to accessing National Forest System lands, will be carried out during implementation of the Travel Management Planning Project (Chapter 2, Table 2-19).

Several factors suggest a range of minor-to-moderate future increases in motorized wheeled access for dispersed camping and associated effects to invasive plants. Most sites that have desirable campsite characteristics have already been established by repeated use, limiting future increases in the number of motorized routes to access them. Many of these campsites are located along roads, and have been analyzed for herbicide application in the 2003 Noxious Weed Treatment Project (USDA Forest Service 2003b). Existing dispersed sites typically have a suitable motorized access route commonly used to get to the site.

Expansion of new and existing sites is expected, but would likely be limited by terrain features including standing and down trees, large rocks, thick vegetation, water features, narrow stream canyons, and abrupt topographic changes. The Forest has a continuing program of installing barriers to limit vehicle access or gravelling defined access routes where needed to reduce streamside impacts. The Forest will continue to monitor the emergence of new dispersed camping sites that are accessed by motorized vehicles, as well as changes at existing sites. Sites where motorized access routes result in the introduction and spread of invasive plants will be altered or closed.

The total number of sites used for dispersed camping, and associated motorized routes, is expected to increase gradually over time. Firewood cutting following beetle or fire events is expected to open up more access routes to dispersed camp sites.

The prohibition against motorized wheeled access for dispersed camping within 30 feet of any flowing stream, pond, lake, marsh, or wetland would have a beneficial effect on the introduction and spread of invasive plants. Riparian areas are very fragile, and easily damaged. Additionally, by having so much moisture, invasive species grow and spread very quickly. Preventing motorized vehicles from having close access to moving water decreases the potential for contributing to the spread of invasive plants downstream.

All unauthorized routes created prior to the 2001 Tri-State Decision would be closed to motorized use unless designated to remain open under one or more of the action alternatives. This will reduce the miles of open roads and trails, and, therefore, the risk of introducing or spreading invasive plants. All action alternatives propose to designate 0.4 miles of an unauthorized, full-size vehicle route, while the miles of unauthorized routes proposed to be designated for ATVs and motorcycle use range from 3 to 35 miles, depending upon the alternative. Many of the unauthorized routes are narrow, in uplands, partially vegetated, and rarely used. Though these unauthorized routes are currently being used by motorized vehicles, the potential for invasive plants introduction and spread, which can have an adverse impact on native plant diversity, and most likely, rare plant viability, could increase when they become designated routes, and the number of vehicles using them expands as users utilize the new recreation opportunities.

B. Direct and Indirect Effects

This analysis will not include details on invasive weed infestations along most Forest roads open to highway legal vehicles since virtually all these roads have spotted knapweed or other invasive plants along the cut and fill slopes if they are below 6,500 feet on south or west aspects. A comparison of alternatives will be made by analyzing (1) the miles of roads which are currently closed that are proposed to be opened, (2) the number of trails proposed to be designated as open to motorcycles and vehicles 50 inches or less in width which are impacted by invasive plants, and (3) the acres of invasive plants infestations within motorized wheeled access corridors for dispersed camping. Due to the size of the vehicles, routes designated for motorcycles or vehicles 50 inches or less in width are more likely to be utilized for illegal, off-road travel. Roads currently closed and proposed for motorized use are more likely to become sources of new weed-seed transport. There is, however, potential for any route open to motorized vehicles to be

used as an illegal access point for off-road, motorized use (particularly by vehicles 50 inches or less in width, due their maneuverability), thereby creating another corridor for weed-seed dispersal.

There is also potential for new weeds to be introduced along any open road and trail as described above in the “Affected Environment” section, because wheeled vehicles can carry more seeds then other users (Trunkle and Fay 1991).

Alternative 1

Under **Alternative 1**, there are known invasive plant species located along some of the trails where motorcycles and vehicles 50 inches or less in width may be traveling. Information on these trails is shown in Table 3.10-3:

Table 3.10- 3: Invasive Plants Present Along Trails in Alternative 1

| Trail (TR) # | Name | Specie(s) | Type of Use |
|--|---------------------------|--|--------------------|
| TR 208 | Ward Mtn | St. John’s wort, sulfur cinquefoil, cheatgrass, spotted knapweed | Motorcycle |
| TR 121 | Sweathouse Creek | Spotted knapweed | Motorcycle |
| TR 125 | Camas Creek | St. John’s wort, cheatgrass, spotted knapweed | Motorcycle |
| TR 156 | Weasel Creek | Spotted Knapweed | Motorcycle |
| TR 177 | Warm Springs Ridge | Spotted Knapweed | Motorcycle |
| TR-OHV1-24 | Lost Horse Observation | St. John’s wort, spotted knapweed | 50” or less |
| TR-SCOP-20 | Trail 104 Extension | Spotted knapweed | Motorcycle |
| TR 313 | Cinnamon Bear Saddle | Oxeye daisy | 50” or less |
| TR 181 | Medicine Point Lookout | Spotted knapweed | Motorcycle |
| TR 601 | Shook Mtn-Medicine Pt. | Spotted knapweed | Motorcycle |
| TR-SCOP-51 | Sula Peak –Elk Point | Spotted knapweed | 50” or less |
| TR 406 | Nee-Me-Poo | Spotted knapweed | Motorcycle |
| TR 503 | Skalkaho Creek Jerry Lake | Spotted knapweed, Canada thistle | Motorcycle |
| TR 676 | Piquette Divide | Spotted knapweed | Motorcycle |
| TR 139 | Deer Creek | Spotted knapweed | Motorcycle |
| TR 138 ¹ | Chicken Creek | Spotted knapweed, rush skeletonweed | Motorcycle |
| TR-OHV1-03 | Jew Mountain | Spotted knapweed, houndstongue | 50” or less |
| Total Number of Trails impacted | | 17 | |

¹ Rush skeletonweed recently found near this trail. This is a new invader for the Montana portion of the Bitterroot National Forest. Annual monitoring of the Chicken Creek area is on-going to determine if this infestation has been completely eradicated or is spreading

Routes that are currently closed and are proposed for reopening are listed in Table 3.10-4:

Table 3.10- 4: Miles of Routes Proposed for Reopening in Alternative 1

| Road# | Name | Type of Use | Miles |
|--------------|----------------------------|--------------------|--------------|
| 1302A | Bear Trap | 50” or less | 2.38 |
| 13154 | (Spring Gulch Cooney Ridge | 50” or less | 0.61 |
| 13255 | N. Cruiser-Mine | 50” or less | 3.19 |
| 5771 | Lick Creek | 50” or less | 1.21 |
| 62415 | Leavens Gulch | 50” or less | 0.39 |
| 62484 | Rye Creek | Hwy legal | 0.21 |
| 62487 | Sleeping Child | Hwy legal | 0.27 |
| 62605 | Dam Creek | 50” or less | 1.31 |

| Road# | Name | Type of Use | Miles |
|--------------|-----------------------|-------------|--------------------|
| 62871 | Little Trapper | 50" or less | 0.79 |
| 62878 | Leavens Gulch | 50" or less | 1.57 |
| 62882 | Little Trapper | 50" or less | 3.97 |
| 62883 | Little Trapper | 50" or less | 0.69 |
| 62884 | Little Trapper | 50" or less | 0.70 |
| 62888 | Chaffin Gulch | 50" or less | 0.20 |
| 702 | Burke Gulch | 50" or less | 0.02 |
| 73016 | East Fork Bertie Lord | 50" or less | 1.05 |
| 73254 | Jennings Camp Creek | Hwy legal | 0.68 |
| 73447 | Elk Point | 50" or less | 2.07 |
| 73951 | Rye Creek | 50" or less | 1.38 |
| 74137 | Coal Creek | 50" or less | 0.38 |
| 74214 | Elk Creek | 50" or less | 1.53 |
| 74950 | Chaffin Creek | 50" or less | 0.52 |
| Total | | | 25.12 miles |

Table 3.10-3 shows that under **Alternative 1**, there are 17 trails which may have the potential to contribute to the spread of invasive plants if they are used for motorized wheeled access for dispersed camping. This compares to 31 routes under **Alternative 2**. There would be approximately 25 miles of roads proposed to be reopened to motorized use in **Alternative 1**. Opening closed roads to motorized use increases the risk of weed spread along these corridors.

Alternative 1 proposes to designate 30 miles of unauthorized routes on the MVUM. About 18 miles would be proposed to be designated as ATV trails seasonally; approximately 1 mile would be designated to be open yearlong (TR-OHV1-24 in Table 3.10-3). Some of these routes would connect existing roads.

Approximately 10 miles of the routes proposed to be designated for ATVs would not be shown on the MVUM until separate site-specific NEPA analysis and decisions, associated with relocating the routes to more sustainable locations to address erosion concerns, are completed and they exist on the ground. Several of these routes are listed in Table 3.10-3.

Additionally, 11 miles of unauthorized routes would be proposed to be designated for use as motorcycle trails: 10 miles would be open seasonally (including TR-SCOP-20 in Table 3.10-3), and 1 mile would be open yearlong (Project File folder 'unauthorized_trails,' Project File document UAT-003.pdf).

For a listing of the unauthorized routes proposed to be designated on the MVUM in **Alternative 1**, please refer to Appendix K to the FEIS.

Alternative 1 would allow motorized wheeled access for dispersed camping within 300 feet on either side of a designated route; corridors would be extended to those sites identified on the maps of the alternatives.

There are approximately 22,095 acres of invasive plant infestations within 300 feet of routes open to motorized vehicles.

Alternative 2 - No Action

Under **Alternative 2**, there are known invasive plant species located along some of the trails where motorcycles and vehicles 50 inches or less in width will be traveling. Information on these trails is shown in Table 3.10-5.

Table 3.10- 5: Invasive Plants Present Along Trails in Alternative 2

| Trail (TR) # | Name | Specie(s) | Type of Use |
|--|---------------------------|--|--------------------|
| TR 146 | Cutoff Trail | Spotted knapweed | Motorcycle |
| TR 321 | Burnt Fork Trail | Spotted knapweed | Motorcycle |
| TR 300 | Willow Creek | Spotted knapweed | Motorcycle |
| TR 311 | Gold Creek | Spotted knapweed, Canada thistle | Motorcycle |
| TR 43 | Gold Creek Ridge | Spotted knapweed | Motorcycle |
| TR 313 | Cinnamon Bear Saddle area | Oxeye daisy | Motorcycle |
| TR 208 | Ward Mtn | St. John's wort, sulfur cinquefoil, cheatgrass, spotted knapweed | Motorcycle |
| TR 125 | Camas Creek | St. John's wort, cheatgrass, spotted knapweed | Motorcycle |
| TR-OHV1-24 | Lost Horse Observation | St. John's wort, spotted knapweed | 50" or less |
| TR 528 | Chaffin Creek | Spotted knapweed | Motorcycle |
| TR-SCOP-20 | Trail 104 Extension | Spotted knapweed | Motorcycle |
| RD-OHV-11 | Brennan Gulch | Leafy spurge, houndstongue, Canada thistle, spotted knapweed | 50" or less |
| TR 676 | Piquette Divide | Spotted knapweed | Motorcycle |
| TR 56 | Wiles Peak | Houndstongue, tall buttercup | Motorcycle |
| TR 181 | Medicine Point Lookout | Spotted knapweed | Motorcycle |
| TR 601 | Shook Mtn-Medicine Pt. | Spotted knapweed | Motorcycle |
| TR 205 | Porcupine Creek | Spotted knapweed | Motorcycle |
| TR 177 | Warm Springs Ridge | Spotted knapweed, cheatgrass | Motorcycle |
| TR 103 | Warm Springs Creek | Spotted knapweed | Motorcycle |
| TR 104 | Fire Creek | Spotted knapweed, cheatgrass | Motorcycle |
| TR 406 | Nee-Me-Poo | Spotted knapweed | Motorcycle |
| TR 175 | Reimel Creek | Spotted knapweed | Motorcycle |
| TR 78 | Reimel-Tolan Divide | Spotted knapweed | Motorcycle |
| TR 203 | Tolan-Reimel Ridge | Spotted knapweed | Motorcycle |
| TR 172 | Elk Ridge | Spotted knapweed, oxeye daisy | Motorcycle |
| TR 434 | Hole in the Wall | Spotted knapweed, houndstongue | Motorcycle |
| TR 39 | Chain of Lakes | Spotted knapweed | 50" or less |
| TR-SCOP-51 | Sula Peak –Elk Point | Spotted knapweed | 50" or less |
| TR 139 | Deer Creek | Spotted knapweed | Motorcycle |
| TR 138 ¹ | Chicken Creek | Spotted knapweed, rush skeleton | Motorcycle |
| TR-OHV1-03 | Jew Mountain | Spotted knapweed, houndstongue | 50" or less |
| Total Number of Trails Impacted | | 31 | |

¹Rush skeletonweed recently found near this trail. This is a new invader for the Montana portion of the Bitterroot National Forest. Annual monitoring of the Chicken Creek area is on-going to determine if this infestation has been completely eradicated or is spreading.

The existing effects of roads and trails on invasive plants are described in Section 3.10.3 (Affected Environment).

Table 3.10-5 shows that under **Alternative 2**, there are 31 trails which may have the potential to contribute to the spread of invasive plants if they are used for motorized wheeled access for dispersed camping.

Under **Alternative 2**, all routes currently open to motorized use would remain open, including those unauthorized routes in existence prior to the 2001 Tri-State Decision. The unauthorized routes are being

used by motorized vehicles, and the potential for invasive plants introduction and spread, which has had an adverse impact on native plant diversity, and most likely, rare plant viability, will continue.

Alternative 2 would not designate any unauthorized routes on the MVUM. While some trails are not recommended for ATV travel in the current Forest Plan, ATVs are permitted on all motorized trails if the route is not barricaded or signed as closed, and if the vehicle fits within the existing tread. Current management plans would continue to guide management of the project area.

As there would be no closed roads reopened in this alternative, there would be no risk of potentially spreading weeds to new areas associated with this action. General effects of motorized travel will be similar to **Alternative 1**.

As long as vehicles stay on designated routes, the risk of spreading invasive plants outside the travel corridor is minimal. There is, however, a risk of introducing new weeds to an area via motorized travel if vehicle undercarriages are not cleaned prior to travel.

As currently permitted under the 2001 Tri-State Decision, **Alternative 2** would allow motorized wheeled access for dispersed camping within 300 feet on either side of a designated route; however, corridors would not be extended as there would not be an exception for those mapped sites greater than 300 feet from a designated route as proposed in **Alternative 1**. Off-road travel has the potential to cause invasive weed spread and effects as described in Section 3.10.4. A (Effects Common to All Action Alternatives).

Project design features, including public education efforts regarding the threats posed by the introduction and spread of invasive plants, and the need to clean vehicle undercarriages prior to accessing National Forest System lands, will be carried out during implementation of the Travel Management Planning Project (Chapter 2, Table 2-19).

There are approximately 23,366 acres of invasive plant infestations within 300 feet of routes open to motorized vehicles.

Alternative 2 would not contain the prohibition against motorized wheeled access for dispersed camping within 30 feet of any flowing stream, pond, lake, marsh, or wetland. This would have an adverse effect on the introduction and spread of invasive plants. Riparian areas are very fragile, and easily damaged. Additionally, by having so much moisture, invasive species grow and spread very quickly. Not preventing motorized vehicles from having close access to moving water increases the potential for contributing to the spread of invasive plants downstream.

Alternative 3

Under **Alternative 3**, there are known invasive plant species located along some of the trails where motorcycles and vehicles 50 inches or less in width would be traveling. Information on these trails is shown in Table 3.10-6.

Table 3.10- 6: Invasive Plants Present Along Trails in Alternative 3

| Trail (TR) # | Name | Specie(s) | Type of Use |
|--------------|-------------------------|---|-------------|
| TR 321 | Burnt Fork Trail | Spotted knapweed | Motorcycle |
| TR 300 | Willow Creek | Spotted knapweed | Motorcycle |
| TR 311 | Gold Creek | Spotted knapweed, canada thistle | Motorcycle |
| TR 4 | Bass Creek | Spotted knapweed; tall buttercup; oxeye daisy | Motorcycle |
| TR 5 | Bear Creek | Spotted knapweed | Motorcycle |
| TR 19 | Blodgett Creek | Spotted knapweed; tall buttercup | Motorcycle |
| TR 41 | Gird Creek/Middle Ridge | Houndstongue | Motorcycle |
| TR 43 | Gold Creek Ridge | Spotted knapweed | Motorcycle |
| TR 59 | North Fork Lost Horse | Spotted knapweed | Motorcycle |

| Trail (TR) # | Name | Specie(s) | Type of Use |
|---------------------|---------------------------|---|-------------|
| TR 78 | Reimal Tolan Divide | Spotted knapweed | Motorcycle |
| TR 83 | Continental Divide NST | Spotted knapweed | Motorcycle |
| TR 96 | Tin Cup | Spotted knapweed | Motorcycle |
| TR 123 | Sawtooth | Spotted knapweed | Motorcycle |
| TR 135 | Nelson Lake | Spotted knapweed | Motorcycle |
| TR 137 | Jack the Ripper | Spotted knapweed | Motorcycle |
| TR 139 | Deer Creek | Spotted knapweed | Motorcycle |
| TR 142 | Sheephead Creek | Spotted knapweed | Motorcycle |
| TR 146 | Cutoff | Spotted knapweed | Motorcycle |
| TR 147 | Bitterroot Big Springs | Spotted knapweed | Motorcycle |
| TR 156 | Weasel Creek | Spotted knapweed | Motorcycle |
| TR 173 | Tolan Basin | Spotted knapweed | Motorcycle |
| TR 183 | Bare Cone | Spotted knapweed | Motorcycle |
| TR 203 | Tolan-Reimel Ridge | Spotted knapweed | Motorcycle |
| TR 247 | Boulder Point Lookout | Sulfur cinquefoil | Motorcycle |
| TR 293 | Bailey Lake | Spotted knapweed | Motorcycle |
| TR 313 | Cinnamon Bear Saddle area | Oxeye daisy | 50" or less |
| TR 392 | Little St. Joe | Spotted knapweed | Motorcycle |
| TR 403 | Tolan-Reimel Cutoff | Spotted knapweed | Motorcycle |
| TR 406 | Nez Perce (Nee-Me-Poo) | Spotted knapweed | Motorcycle |
| TR 503 | Skalkaho Creek-Jerry Lake | Spotted knapweed; canada thistle | Motorcycle |
| TR 528 | Chaffin Creek | Spotted knapweed | Motorcycle |
| TR 598 | Trapper Creek | Spotted knapweed | Motorcycle |
| TR 614 | Blue Joint | Spotted knapweed; tall buttercup; canada thistle | Motorcycle |
| TR 617 | Blue Joint | Spotted knapweed | Motorcycle |
| TR 675 | Piquett Creek | St. John's wort | Motorcycle |
| TR 699 | Watchtower | Spotted knapweed | Motorcycle |
| TR 208 | Ward Mtn | St. John's wort, sulfur cinquefoil, cheatgrass, spotted knapweed | Motorcycle |
| TR 125 | Camas Creek | St. John's wort, cheatgrass, spotted knapweed | Motorcycle |
| TR-OHV1-24 | Lost Horse Observation | St. John's wort, spotted knapweed | 50" or less |
| TR-SCOP-20 | Trail 104 Extension | Spotted knapweed | Motorcycle |
| TR 56 | Wiles Peak | Houndstongue, tall buttercup | Motorcycle |
| TR 181 | Medicine Point Lookout | Spotted knapweed | Motorcycle |
| TR 601 | Shook Mtn-Medicine Pt. | Spotted knapweed | Motorcycle |
| TR 205 | Porcupine Creek | Spotted knapweed | Motorcycle |
| TR 177 | Warm Springs Ridge | Spotted knapweed, cheatgrass | Motorcycle |
| TR 103 | Warm Springs Creek | Spotted knapweed | Motorcycle |
| TR 104 | Fire Creek | Spotted knapweed, cheatgrass | Motorcycle |
| TR 139 | Deer Creek | Spotted knapweed | Motorcycle |
| TR 406 | Nee-Me-Poo | Spotted knapweed | Motorcycle |
| TR 175 | Reimel Creek | Spotted knapweed | Motorcycle |
| TR 78 | Reimel-Tolan Divide | Spotted knapweed | 50" or less |
| TR 172 | Elk Ridge | Spotted knapweed, oxeye daisy | Motorcycle |
| TR 434 | Hole in the Wall | Spotted knapweed, houndstongue | Motorcycle |
| TR 39 | Chain of Lakes | Spotted knapweed | 50" or less |
| TR 676 | Piquette Divide | Spotted knapweed | Motorcycle |
| TR-SCOP-51 | Sula Peak –Elk Point | Spotted knapweed | 50" or less |
| TR 138 ¹ | Chicken Creek | Spotted knapweed, rush skeletonweed | Motorcycle |
| TR-OHV1-03 | Jew Mountain | Spotted knapweed, houndstongue | 50" or less |

| Trail (TR) # | Name | Specie(s) | Type of Use |
|--|------|-----------|-------------|
| Total Number of Trails Impacted | | 58 | |

¹ Rush skeletonweed recently found near this trail. This is a new invader for the Montana portion of the Bitterroot National Forest. Annual monitoring of the Chicken Creek area is on-going to determine if this infestation has been completely eradicated or is spreading.

Routes that are currently closed and are proposed for reopening are listed in Table 3.10-7.

Table 3.10- 7: Miles of Routes Proposed for Reopening in Alternative 3

| Road# | Name | Type of Use | Miles |
|--------------|-----------------------|-------------|-------------------|
| 1302A | Beartrap | 50" or less | 2.38 |
| 13255 | N. Cruiser-Mine | 50" or less | 3.19 |
| 13279 | St. Clair | Hwy legal | 1.51 |
| 13280 | St. Clair | Hwy legal | 1.04 |
| 13282 | St. Clair | Hwy legal | 0.57 |
| 1369 | Gird-St. Clair | Hwy legal | 3.29 |
| 5610 | Fishtail | 50" or less | 5.39 |
| 5771 | Lick Creek | 50" or less | 1.21 |
| 62299 | East Gold | Motorcycle | 0.22 |
| 62415 | Leavens Gulch | 50" or less | 0.39 |
| 62484 | Rye Creek | Hwy legal | 0.21 |
| 62487 | Sleeping Child | Hwy legal | 0.27 |
| 62605 | Dam Creek | 50" or less | 1.31 |
| 62871 | Little Trapper | 50" or less | 0.79 |
| 62878 | Leavens Gulch | 50" or less | 1.57 |
| 62882 | Little Trapper | 50" or less | 3.97 |
| 62883 | Little Trapper | 50" or less | 0.69 |
| 62884 | Little Trapper | 50" or less | 0.70 |
| 62888 | Chaffin Gulch | 50" or less | 0.20 |
| 702 | Burke Gulch | 50" or less | 0.02 |
| 73016 | East Fork Bertie Lord | 50" or less | 1.05 |
| 73254 | Jennings Camp Creek | Hwy legal | 0.68 |
| 73447 | Elk Point | 50" or less | 2.07 |
| 73951 | Rye Creek | 50" or less | 1.38 |
| 741 | East Gold Creek | Motorcycle | 0.90 |
| 74137 | Coal Creek | 50" or less | 0.38 |
| 74950 | Chaffin Creek | 50" or less | 0.52 |
| Total | | | 35.9 miles |

Table 3.10-6 shows that under **Alternative 3**, there are 58 trails which may have the potential to contribute to the spread of invasive plants if they are used for motorized wheeled access for dispersed camping. This compares to 31 routes under **Alternative 2**. There would be approximately 36 miles of routes proposed to be reopened in **Alternative 3**. Opening closed roads to motorized use increases the risk of weed spread along the corridors.

Alternative 3 proposes to designate 35 miles of unauthorized routes on the MVUM. About 19 miles of would be proposed to be designated as ATV trails seasonally; approximately 1 mile, TR-OHV1-24 in Table 3.10-6, would be designated to be open yearlong. Some of these routes would connect existing roads.

About 10 miles of the routes proposed to be designated for ATVs would not be shown on the MVUM until separate site-specific NEPA analysis and decisions, associated with relocating the routes to more sustainable locations to address rutting and erosion concerns, are completed and they exist on the ground.

Under **Alternative 3**, 14 miles of unauthorized routes would be proposed to be designated seasonally to use by motorcycles, including TR-SCOP-20 in Table 3.10-6, and 1 mile would be designated for yearlong use {Project File folder 'unauthorized_trails,' Project File document UAT-004.pdf}.

For a listing of the unauthorized routes proposed to be designated on the MVUM in **Alternative 3**, please refer to Appendix K to the FEIS.

Alternative 3 would allow motorized wheeled access for dispersed camping within 300 feet on either side of a designated route; corridors would be extended to those sites identified on the maps of the alternatives.

There are approximately 23,701 acres of invasive plant infestations within 300 feet of routes open to motorized vehicles.

Alternative 4

Under **Alternative 4**, there are known invasive plant species located along one of the trails where motorcycles and vehicles 50 inches or less in width would be traveling. Information on this trail is shown in Table 3.10-8.

Table 3.10- 8: Invasive Plants Present Along Trails in Alternative 4

| Trail (TR) # | Name | Species | Type of Use |
|--|------------------------|-----------------------------------|-------------|
| TR-OHV1-24 | Lost Horse Observation | St. John's wort, Spotted knapweed | 50" or less |
| Total Number of Trails Impacted | | 1 | |

Routes that are currently closed and are proposed for reopening are shown in Table 3.10-9.

Table 3.10- 9: Miles of Routes Proposed for Reopening in Alternative 4

| Road# | Name | Type of Use | Miles |
|--------------|-----------------------|-------------|-------------------|
| 62484 | Rye Creek | Hwy legal | 0.20 |
| 62487 | Sleeping Child | Hwy legal | 0.30 |
| 702 | Burke Gulch | 50" or less | 0.02 |
| 73016 | East Fork Bertie Lord | 50" or less | 1.00 |
| Total | | | 1.52 miles |

Table 3.10-8 shows that under **Alternative 4**, there is one trail which may have the potential to contribute to the spread of invasive plants if it is used for motorized wheeled access for dispersed camping. This compares to 31 routes under **Alternative 2**. Approximately 1.50 miles of closed roads are proposed to be reopened in **Alternative 4** (Table 3.10-9). Opening closed roads to motorized use increases the risk of weed spread along the corridors.

Alternative 4 proposes to designate 3 miles of unauthorized routes on the MVUM. About 2 miles would be proposed to be designated as ATV trails seasonally; approximately 1 mile, TR-OHV1-24 in Table 3.10-8, would be designated to be open yearlong. Several would connect existing roads.

No unauthorized trails for motorcycles would be proposed for designation in **Alternative 4**. All of the routes would be shown on the MVUM as no separate site-specific NEPA analysis would be required {Project File folder 'unauthorized_trails,' Project File document UAT-005.pdf}.

For a listing of the unauthorized routes proposed to be designated on the MVUM in **Alternative 4**, please refer to Appendix K to the FEIS.

Under **Alternative 4**, motorized wheeled access for dispersed camping would only be allowed within 150 feet of either side of designated routes, so the potential to spread invasive plant species to new areas will be reduced by about half compared to **Alternative 2**. Corridors would be extended to those sites identified on the maps of the alternatives.

There are approximately 12,488 acres of invasive plant infestations within 150 feet of routes open to motorized vehicles.

Over-Snow

Over-snow vehicle use has the potential for introducing or spreading invasive plants if weed seeds are present on the undercarriages of over-snow vehicles. Project design features, including public education efforts regarding the threats posed by invasive plants, and the need to clean vehicle undercarriages prior to accessing National Forest System lands, will be carried out during implementation of the Travel Management Planning Project. Refer to Chapter 2, Table 2-19 for additional information.

Summary

All alternatives would have routes designated open to motorized vehicles which have invasive plants located along them. **Alternative 3** would have 58 trails, **Alternative 2** would have 31 trails, **Alternative 1** would have 17 trails, and **Alternative 4** would have one trail. Invasive plants will continue to spread along all open routes at their current rate, as travel corridors are an invasive plant vector. There is also the potential for new invasive plants to be introduced along open roads and trails by vehicles. If vehicles illegally travel off open motorized routes, weeds could be spread further off road to weed-free areas. However, as long as vehicles stay on designated routes, the risk of spreading weeds outside the travel corridor is minimal.

There is also the possibility for new invasive plants to be introduced, and existing ones to be spread, along routes currently closed to motorized vehicles which are propose to be reopened with the Travel Management Planning project. **Alternative 3** would reopen 36 miles of routes; **Alternative 1** would reopen 25 miles of routes, **Alternative 4** would reopen 1.5 miles, while **Alternative 2** would not reopen any miles.

Designating unauthorized routes could result in an increase in the introduction and spread of invasive plants. Though these unauthorized routes are currently being used by motorized vehicles, the potential for invasive plants introduction and spread, which can have an adverse impact on native plant diversity, and most likely, rare plant viability, could increase when they become designated routes, and the number of vehicles using them expands as users utilize the new recreation opportunities. **Alternative 3** would designate 35 miles of unauthorized routes, followed by **Alternative 1**, 30 miles, and **Alternative 4**, 3 miles. **Alternative 2** would not designate any unauthorized routes.

Allowing motorized wheeled access for dispersed camping has the potential to spread invasive plants or introduce plants to new areas, including areas that may be weed-free. **Alternatives 1, 2, and 3** would allow motorized wheeled access for dispersed camping within a 300 foot corridor off of designated routes; under **Alternatives 1 and 3**, corridors would be extended to those sites identified on the maps of the alternatives. **Alternative 4** would allow motorized wheeled access for dispersed camping within a 150 foot corridor on either side of designated routes; corridors would be extended to those sites identified on the maps of the alternatives. **Alternatives 1, 3, and 4** would contain the prohibition against motorized wheeled access for dispersed camping within 30 feet of any flowing stream, pond, lake, marsh, or wetland; **Alternative 2** would not contain the prohibition.

Limiting motorized travel off of roads and trails beyond the 150 or 300 foot dispersed camping corridors will reduce the risk of spreading invasive plant species.

With respect to the acres of acres of invasive plant infestations within the corridors for motorized wheeled access for dispersed camping, **Alternative 3** would have approximately 23,701 acres, **Alternative 2** would have approximately 23,366 acres, **Alternative 1** would have about 22,095 acres, and **Alternative 4** would have approximately 12,488 acres.

Since all routes currently open to motorized use, including an undetermined number of miles of unauthorized routes used primarily by ATVs and motorcycles, will remain open in **Alternative 2**, and it would not contain the prohibition against motorized wheeled access for dispersed camping within 30 feet of any flowing stream, pond, lake, marsh, or wetland, or the limitation of the dispersed camping corridor, the overall impact on invasive plants would be highest with this alternative, followed by **Alternatives 3, 1, and 4**.

C. Cumulative Effects

Geographic Boundaries

The cumulative effects analysis for Rare Plants (Chapter 3, Section 3.9) covers much of the information relevant to invasive plants since competition with weeds is one of the major threats to sensitive plant habitat.

The defined cumulative effects analysis area for invasive plants is the same as the project area; the portion of the Bitterroot National Forest outside of Designated Wilderness. This analysis area is appropriate to analyze any incremental effects from the actions of this project, in combination with past, present, and reasonably foreseeable activities, because effects of implementing travel planning decisions on the Bitterroot National Forest would be negligible to invasive plants outside this analysis area.

Activities Within the Cumulative Effects Analysis Area

Past actions have substantially contributed to the existing condition for invasive plants, which is described in Section 3.10.3 (Affected Environment). The construction of National Forest System roads and trails, and other activities associated primarily with timber harvest projects, resulted in the introduction or spread, or both, of invasive plants.

Appendix A to the FEIS describes past, present, and reasonably foreseeable forest and other activities which, when combined with the activities proposed in the Travel Management Planning Project, could potentially result in cumulative effects to invasive plants. The Worksheet for Consideration of Cumulative Effects to Invasive Plants has been completed and is included as {Project File document NOX-004.pdf}.

Summer

Some forest activities have a negligible effect on invasive plants for the following reasons:

- Ø The activity's disturbance is too small and isolated to produce an effect
- Ø Project design features are applied to reduce the activity's effects to negligible levels
- Ø The activity's location is not within suitable invasive plant habitat

Examples of forest activities which, when carried out consistent with existing regulations, result in negligible cumulative effects to invasive plants include:

- Ø Personal Use Firewood Cutting
- Ø Personal Use Christmas Tree Harvesting

There are other forest activities which could result in cumulative effects to invasive plants:

Timber Harvest, Prescribed Burning, and Associated Activities

Timber harvest, road building, and other activities associated with harvesting timber have resulted in the introduction and spread of invasive plants, as the use of harvest equipment in sale areas, and the ground

disturbance and openings created by harvest, encouraged weed infestations. The construction of permanent logging roads removed native vegetation and created corridors for weed spread into previously undisturbed areas. Although most newly constructed roads were seeded to prevent erosion, the seed mixes used were not always weed-seed free, and often included invasive grass species such as smooth brome (*Bromus inermis*) and crested wheatgrass (*Agropyron cristatum*).

Several present and reasonably foreseeable projects listed in Appendix A to the FEIS will decommission, store, or close system roads and “undetermined” status roads. In the case of some “undetermined” status roads, they may be placed on the Forest’s Transportation System if the project-specific travel analysis determines they are necessary for future management. The Darby Lumber Lands Watershed Improvement and Travel Management Project proposes to place approximately 55 miles of closed roads into long-term storage, and decommission an additional 66 miles of roads. The Three Saddle Vegetation Management project will decommission approximately 9.5 miles of road, and place about 1.1 miles of road in long-term storage. The Como Forest Health Protection Project will place approximately 3.1 miles of undetermined roads in long-term storage, and will decommission about 3.5 miles of undetermined roads. The Meadow Vapor project will be proposing to decommission and place roads in long-term storage.

Decommissioning roads permanently removes them from the Forest’s Transportation System, preventing motorized use by the public and Forest Service personnel. Placing roads in long-term storage would also eliminate motorized use by the public and Forest Service personnel. These actions would help prevent the introduction or spread, or both, of invasive plants across the Forest.

Road and Trail Management

Road maintenance activities have been a source of weed seed introduction, particularly in the past, by using machinery that had not been cleaned of weed seed, as well as non-weed seed free seed mixes. Some of the same policies noted above under the Timber Harvest, Prescribed Burning, and Associated Activities section have been implemented to aid in preventing invasive plants spread. Forest Service Manual (FSM) 2080 {Project File document NOX-002.pdf}, includes requirements for road maintenance activities which should help reduce the risk of spreading weeds during road maintenance activities.

Cattle Grazing

Grazing on the Bitterroot National Forest, state, and private lands contributed to the introduction and spread of invasive plants. Prior to the Taylor Grazing Act of 1934, livestock grazing was mostly uncontrolled. After 1934, the number of livestock on public lands was drastically reduced with a permit system. Livestock can introduce invasive plants by transporting weed seed to new areas and by overgrazing native plant species which otherwise may be capable of competing with invasive plants. Currently, grazing allotments on the Bitterroot National Forest are fairly small and, although invasive plant-spread still occurs through livestock, it is not as large a problem as in the past.

Wildfire Suppression

Fire suppression activities can lead to the introduction and spread of invasive plants. Building firelines, safety zones, helipads, and drop zones with machinery creates weed corridors and removes large areas of native vegetation. Large fire camps used for several weeks at a time can be sources of weed introductions. Vehicles from other states can bring in new invaders. Although seeding and mulching disturbed areas is mostly effective, invasive plant introductions can still be hard to control especially on the drier, south and west aspects. Forest Service Manual 2080 includes weed prevention requirements and recommendations for fire suppression activities.

Public Use

Invasive plants have been introduced by off road use, including OHVs, snowmobiles, horses, and hikers. Educational campaigns are more prolific than in the past, and off road motorized use is mostly prohibited. However, controlling the transport of weed seed via public land use can be difficult.

Special Uses\Permits

Permittees using National Forest System lands for water usage, wilderness dam maintenance, outfitting\guiding, mining, research studies, rock collecting or gravel pit operations, accessing private lands, and other activities can spread invasive plants via their equipment, livestock, and disturbance created as part of their permit. Since 2001, as permits are renewed, FSM 2080 has requirements to be included for weed prevention.

Horse users are required to use certified “weed free or weed seed free” hay, mulch, seed and pellets. It is also recommended that backcountry pack and saddle stock users feed only weed-free feed for several days prior to traveling off roads in the Forest. Before entering National Forest System lands, animals should be brushed to remove any weed seed. (FSM 2081.2, section 2.b.(1)(a).

Activities on State and Private Land

Activities such as timber harvest, prescribed burning, and grazing occurring on adjacent State and private lands can result in invasive plant introduction and spread onto National Forest System lands. Invasive plants can also be transported onto the Bitterroot National Forest from adjacent national forests: the Salmon-Challis to the south; the Beaverhead-Deerlodge to the south and east; and the Lolo to the north. Invasive plants have also been transported into the Selway-Bitterroot Wilderness within the Nez Perce and Clearwater National Forests via airplane, horse, hikers, and boaters, and then moved along trails to the Bitterroot National Forest. The Magruder Road has been a vector for bringing in starthistle (*Centaurea solstitialis*) from Idaho when hunters drive over to Paradise to hunt in the Selway-Bitterroot Wilderness.

Wildfires

The spread of invasive plants by wildfire is a more recent problem, as more weeds are present than in the past, and wildfires are more severe. Once a wildfire spreads through an area, it leaves openings in the forest, and weeds are more likely to encroach into these areas. Cheatgrass become a problem on the Bitterroot National Forest particularly after the fires of 2000, where it was seen coming in under the canopy of burned ponderosa pine trees. Other areas with previously depauperate vegetation were also susceptible to cheatgrass invasion. Spotted knapweed also came into areas that burned in 2000, due to the newly created openings in previously forested areas. Future wildfires are likely to exacerbate this problem.

Natural Disturbance Events

Floods, large wind events, and blizzards can create large areas of disturbance and forest openings, resulting in invasive plants introductions or spread.

Over-Snow

As many roads and trails would be snow-covered during the winter months, this would limit their use by motorized vehicles, both by the public and Forest Service personnel, so there would be little likelihood for the transporting of invasive plants seeds associated with forest management activities including road and trail management, and invasive plants management, or activities on state and private land. Cattle typically graze on allotments on National Forest System lands between May 15 and October 31; they would not be grazing during the winter months.

Public use of over-snow vehicles, such as snowmobiles, for personal use firewood cutting and personal use Christmas tree harvesting has the potential for introducing or spreading invasive plants if weed seeds are present on the undercarriage of vehicles.

Motorized equipment\vehicles associated with timber harvest projects, which operate during the winter months, could introduce or spread invasive plants if weeds seeds are present on vehicle undercarriages.

Cumulative Effects From the Implementation of the Alternatives

Alternative 1

Most of the above listed present and reasonably foreseeable activities could have cumulative effects on invasive plants in combination with the activities proposed in the Travel Management Planning Project, during the summer months, but not with over-snow vehicle use. However, for the most part, the effects would be negligible due to the requirements for the use of design features to minimize or avoid impacts associated with motorized/mechanical transport use, including those contained in FSM 2080. Road decommissioning and placement of roads in long-term storage would have beneficial effects on invasive plants.

Alternative 2

Most of the above listed present and reasonably foreseeable activities could have cumulative effects on invasive plants in combination with the activities proposed in the Travel Management Planning Project, during the summer months, but not with over-snow vehicle use. However, for the most part, the effects would be negligible due to the requirements for the use of design features to minimize or avoid impacts associated with motorized/mechanical transport use, including those contained in FSM 2080. Road decommissioning and placement in long-term storage would have beneficial effects on invasive plants.

Alternative 3

Most of the above listed present and reasonably foreseeable activities could have cumulative effects on invasive plants in combination with the activities proposed in the Travel Management Planning Project, during the summer months, but not with over-snow vehicle use. However, for the most part, the effects would be negligible due to the requirements for the use of design features to minimize or avoid impacts associated with motorized/mechanical transport use, including those contained in FSM 2080. Road decommissioning and placement in long-term storage would have beneficial effects on invasive plants.

Alternative 4

Most of the above listed present and reasonably foreseeable activities could have cumulative effects on invasive plants in combination with the activities proposed in the Travel Management Planning Project, during the summer months, but not with over-snow vehicle use. However, for the most part, the effects would be negligible due to the requirements for the use of design features to minimize or avoid impacts associated with motorized/mechanical transport use, including those contained in FSM 2080. Road decommissioning and placement in long-term storage would have beneficial effects on invasive plants.

Cumulative Effects Finding

There could be cumulative effects to invasive plants from past, ongoing, and reasonably foreseeable activities including timber harvest, prescribed burning, and associated activities, road and trail management, cattle grazing, wildfire suppression, public use, special uses\permits, and activities on State and private land, during the summer months, in combination with the activities proposed in **Alternatives 1, 2, 3, and 4**.

The incorporation of project design features into the proposed activities, as well as in Present and Reasonably Foreseeable Activities, will help minimize the introduction and spread of invasive plants.

With respect to over-snow vehicle use, there could be cumulative effects to rare plants associated with personal use firewood cutting, personal use Christmas Tree harvesting, special uses\permits, and timber harvest projects, in addition to the activities proposed in **Alternatives 1, 2, 3, and 4**.

It should be noted that implementing **Alternatives 1, 3, and 4** would reduce the cumulative effects of past activities because many unauthorized routes would no longer be available for motorized travel, and the potential for introducing or spreading invasive plants, or both, would be reduced.

3.10.5 CONSISTENCY WITH THE FOREST PLAN, LAWS, AND REGULATIONS

The Travel Management Planning Project is essentially a planning effort, and does not create new ground disturbance. As such, consistency with existing regulation is a matter of incorporating various concerns into the planning effort. This has been done in all phases of the project.

A. Bitterroot National Forest Plan

Consistency with the Bitterroot National Forest Plan forest-wide resource standard applicable to invasive plants would be accomplished the following ways; there are no management area standards applicable to invasive plants.

Forest-wide Management Standard:

The primary means of preventing, containing, or controlling noxious weeds will be through vegetative management practices and by the use of biological agents such as insects, rusts, molds and other parasites on host plants. However, herbicides may be utilized to provide short-term protection on specific sites, after appropriate environmental analysis (USDA Forest Service 1987a, II-29).

How addressed:

The 2001 supplement to the Forest Service Manual (FSM 2080) {Project File folder ‘invasive plants,’ Project File document NOX-002.pdf} outlines an Integrated Weed Management approach for the control of invasive plants on National Forest System lands in Region 1, including the Bitterroot National Forest. The supplement contains requirements and recommendations for invasive plants management when conducting ground-disturbing activities.

Ongoing integrated invasive plants control measures will continue Forest-wide, including the use of herbicides in areas analyzed for application, release of biological controls, mechanical methods, education, and timber sale contract requirements. In some cases, controlling one invasive plant, like spotted knapweed, brings in another invasive plant, like cheatgrass. New invaders like rush skeletonweed, starthistle, and meadow hawkweed are eradicated immediately in order not to start another new infestation.

Weed control efforts are designed to protect resource values, keep weeds from spreading into mostly weed-free areas, and prevent weed spread onto adjacent lands {Project File document NOX-002.pdf}(USDA Forest Service 2003b).

All alternatives would be in compliance with the applicable forest-wide Forest Plan standard.

Forest-wide Management Standards:

There are no management area standards applicable to invasive plants.

There are no other applicable laws or regulations pertaining to invasive plants.

3.10.6 CHANGES BETWEEN DRAFT EIS AND FINAL EIS

- Ø Minor grammatical edits were made to correct typographical errors and to improve readability.
- Ø Changed the name of the resource from Noxious Weeds to Invasive Plants. Noxious weeds is a state designation, and the Forest Service analyzes all invasive plants regardless of designation. Additionally, the trend is switching to using that terminology.
- Ø Section 3.10.1 (Scope of Analysis and Analysis Methods). Added descriptions of the measurement indicators. Additionally, one of the indicators was changed. In the DEIS it read: “Potential impact of dispersed camping within 150 and 300 foot corridors on noxious weed spread.” It was changed in the FEIS to read: “The acres of invasive plants infestations within motorized wheeled access corridors for dispersed camping.”

- Ø Section 3.10.4 B (Direct and Indirect Effects). Edits to Tables 3.10-3, 3.10-4, 3.10-6, 3.10-7, and 3.10-9 to reflect changes in the alternatives. Deleted Tables 3.10-5 and 3.10-11 as they did not contribute to the analysis; they only showed the impacts to six dispersed camping areas.
- Ø Section 3.10.4 C (Cumulative Effects). Effects associated with over-snow vehicle use were added.
- Ø Section 3.10.5 (Consistency with Forest Plan, Laws, and Regulations). Rewritten to provide clarity and organization.